DOCUMENT RESUME

ED 085 821 EA 005 690

TITLE	An Introduction to PLANTRAN II: A Simulation System for Educational Planning.
INSTITUTION	Midwest Research Inst., Kansas City, Mo. Economics and Management Science Div.
PUB DATE	[72]
NOTE	79p.; Related documents are EA 005 691-694 and ED 048 824
AVAILABLE FROM	Midwest Research Institute, 425 Volker Boulevard, Kansas City, Missouri 64110 (Free)
EDRS PRICE	MF-$0.65 HC Not Available from EDRS.
DESCRIPTORS	Administrator Guides; Computer Oriented Programs; Computers; *Educational Planning; *Electronic Data Processing; *Higher Education; *Institutional Research; Management Information Systems; Management Systems; Models; *Simulation; Systems Approach
IDENTIFIERS	*PLANTRAN II

ABSTRACT

PLANTRAN II is a system of computer software designed to assist educational administrators in their planning and analysis activities. The unique feature of PLANTRAN II is that it requires no computer programing experience or expertise. Users with technical background have found PLANTRAN II helpful in their analyses without reducing the complexity and sophistication of their work. Specifically, administrators use the system to build computer models. The booklet makes minimum use of text and maximum use of graphs and figures. (Author)

EA 005 690

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 085821

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL BY MICROFICHE ONLY HAS BEEN GRANTED BY
Midwest Research Institute
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER

An Introduction to PLANTRAN II

MRI

MIDWEST RESEARCH INSTITUTE
425 VOLKER BOULEVARD
KANSAS CITY, MISSOURI 64110

FILMED FROM BEST AVAILABLE COPY

This booklet is designed to provide you with the essential information about PLANTRAN II. Since this format makes minimum use of text and maximum use of graphs and figures, you will be able to go through the booklet in about 15 minutes. The continuity of the presentation will be enhanced if you always keep two pages in view.

MRI

PLANTRAN II

A SIMULATION SYSTEM FOR EDUCATIONAL PLANNING

PLANTRAN II is a system of computer software designed to assist educational administrators in their planning and analysis activities. The unique feature of PLANTRAN II is that it requires no computer programming experience or expertise. Hundreds of administrators, most with no technical training or experience, have become proficient in the use of PLANTRAN II after a day of instruction and practice. Users with technical background have found PLANTRAN II helpful in their analyses without reducing the complexity and sophistication of their work.

Specifically, administrators use PLANTRAN II to build computer MODELS.

MODEL

A model is the representation of an object or system which is designed to look like or act like the real thing. There are different types of models. For example:

Physical models	-	Airplane models Toy trains Architect's mock-up
Schematic models	-	Blueprints Organizational charts Electronic circuit
Mathematical models	-	Algebraic formula Questionnaires Budget

While we may not often think of it this way, a college budget is a model. It is a set of mathematical statements which describe a college.

A COMMON MATHEMATICAL MODEL IN HIGHER EDUCATION

THE COLLEGE BUDGET

Tuition	Instruction
Gifts	Library
Grants	Administration
Endowment	Physical Plant
Taxes	
TOTAL INCOME	TOTAL EXPENSE

To develop a budget model of a college or university, the planner will have to include several nonbudget items. These are the policy and environmental factors which determine income and expense.

AN INSTITUTIONAL MODEL BASED ON BUDGET STRUCTURE

The Planning Framework or Matrix:

Planning Item	Current	Next Year	Two Years	Year After That
Students				
Faculty				
Income				
Expense				
Books				

.
.
.

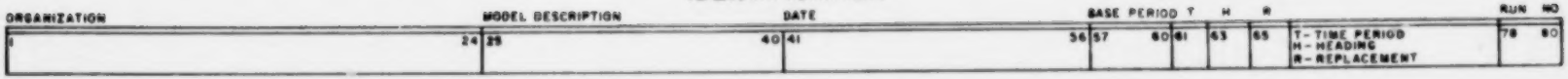
While PLANTRAN II models are not all budget models, they all are constructed in a matrix format. In many applications, the matrix rows are planning items and the columns are time periods. The figure above is an example of that kind of matrix.

The Planning Framework or Matrix:

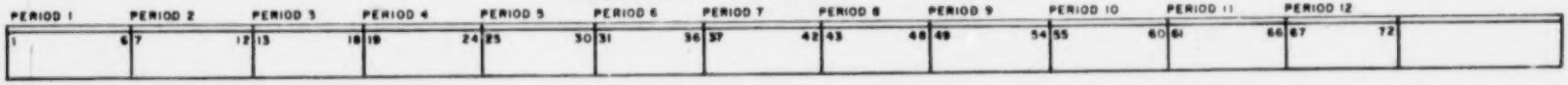
Planning Item	English	Chemistry	Psychology	Biology
Faculty Salaries				
Fringe Benefits				
Clerical				
Equipment				
Supplies				
Total				

In other applications, the matrix columns do not represent time. The example above uses the columns to represent departments within a college. Columns can also be used to represent a different set of assumptions underlying the same model. Thus the columns could be different budgets for 1 year. You can see that the matrix format is very flexible and applicable to a wide variety of planning and analysis activities.

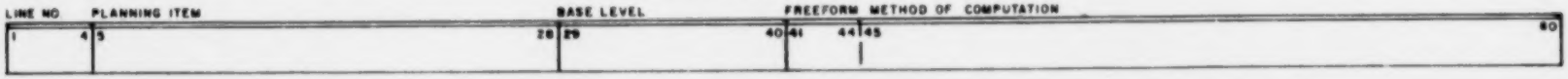
IDENTIFICATION



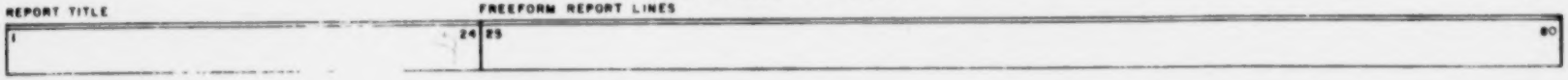
COLUMNAR HEADINGS - OPTIONAL



MODEL SPECIFICATION



SUMMARY REPORTS



To develop these planning matrices, PLANTRAN II uses the input formats shown above.

what you do

ORGANIZATION	MODEL DESCRIPTION	DATE	BASE PERIOD	Y	H	R		RUN NO
SAMPLE UNIVERSITY	BUDGET PROJECT	CURRENT DATE	1971				Y - TIME PERIOD H - HEADING R - REPLACEMENT	001

what the computer does

SAMPLE UNIVERSITY
BUDGET PROJECT

CURRENT DATE
RUN 001

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983

The Plan Identification Input allows the user to describe his model, date it, and determine the column headings. With the optional Columnar Headings Input, the user can use alphabetic and numeric characters to head each column. The user can specify either a 6- or 12-column planning matrix.

MODEL SPECIFICATION KEYWORDS

PERCENT	SUM	FILL	HEADING
INCREASE	SHIFT	PROJECT	AVERAGE
DECREASE	EQUATION	ACCUMULATIVE SUM	PLOT
GOAL	MAXIMUM	ACCUMULATIVE PRODUCT	RETURN ON INVESTMENT
DATA	MINIMUM	PUNCH	

The Model Specification input uses a set of "keywords" to specify the method of projecting each planning item. The list of "keywords" is shown above. Each keyword has a set of "reserved characters" to specify the magnitude and direction of change and other factors appropriate to each method.

METHODS OF PROJECTION

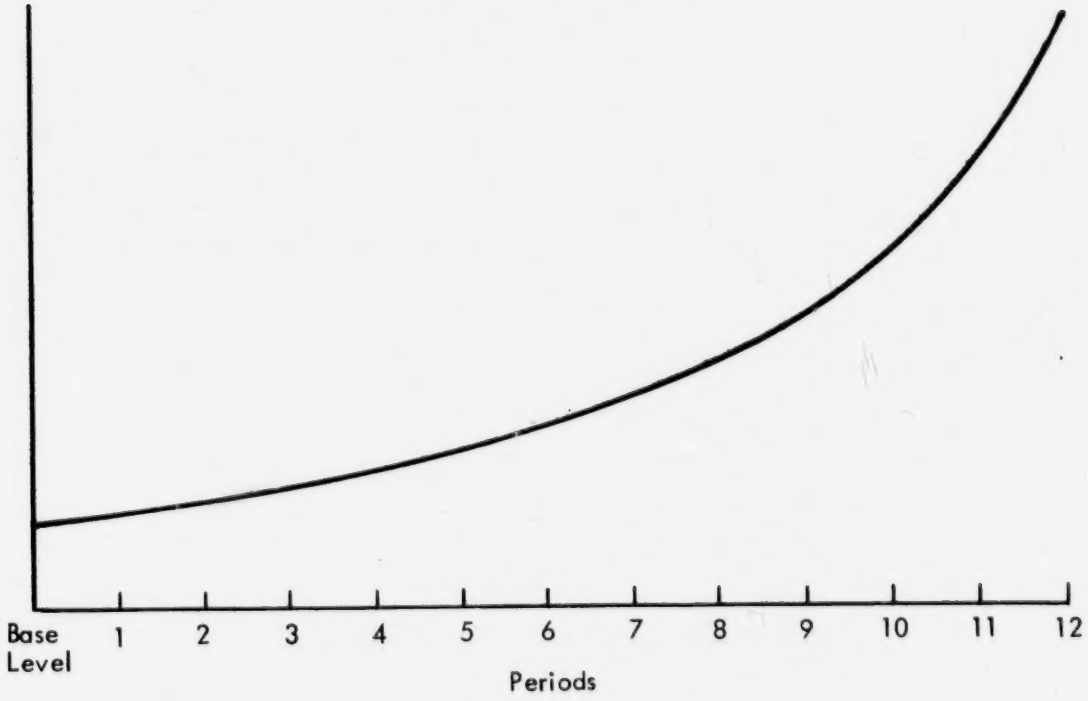
Independent

Dependent

INDEPENDENT METHODS OF PROJECTION

Method	Keyword
Change By a Percentage	PERCENT
Change By an Increment	INCREASE DECREASE
Change To Achieve a Goal	GOAL
User Supplied Data	DATA

CHANGE BY A PERCENTAGE



CHANGE BY A PERCENTAGE

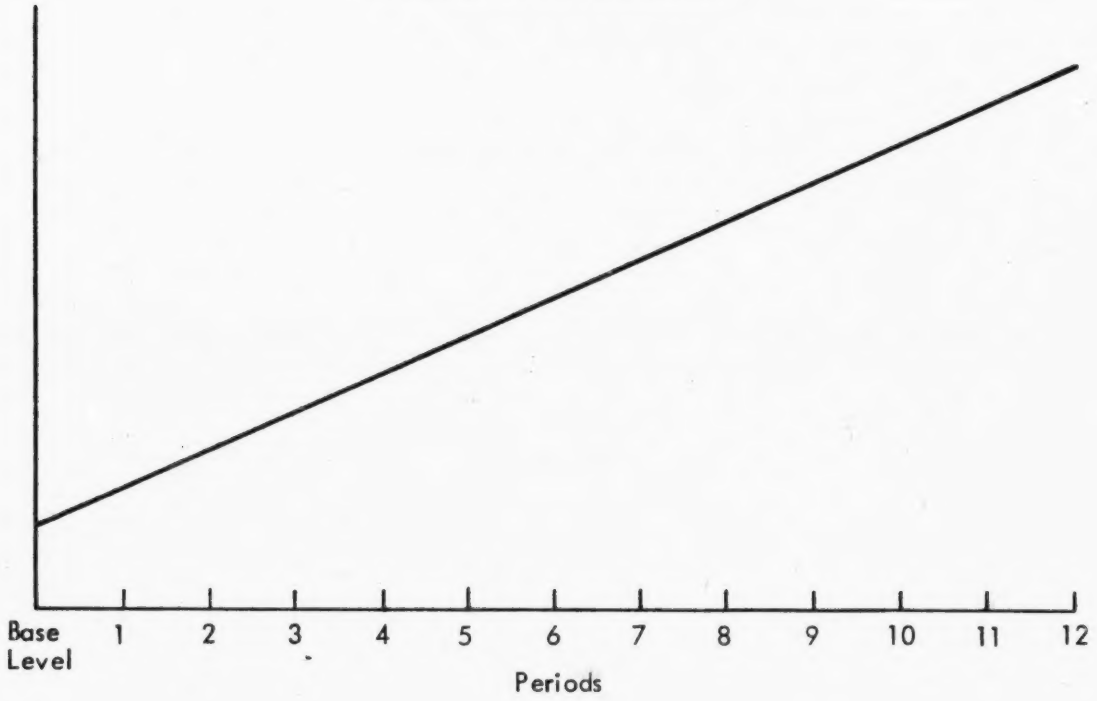
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
30	AVE SALARY UNDERGRAD FAC	12389.	PERCENT INCREASE OF 6 PERCENT PER PERIOD

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	198	1981	1982	1983
30	AVE SALARY UNDERGRAD FAC	13132.34	13920.28	14755.50	15640.83	16579.28	17574.03	18628.48	19746.18	20930.95	22186.81	23518.02	24929.1

CHANGE BY AN INCREMENT



CHANGE BY AN INCREMENT

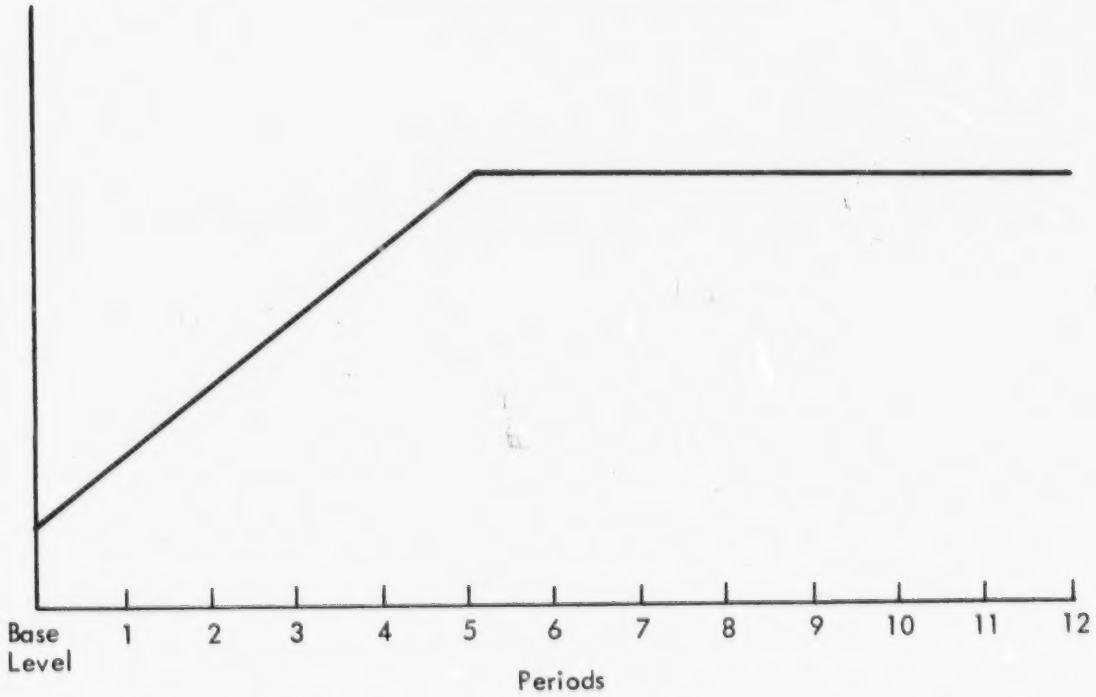
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
20	FEES INSTATE UNDERGRAD	405.	INCREASE BY 20 PER PERIOD

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
20	FEES INSTATE UNDERGRAD	425.00	445.00	465.00	485.00	505.00	525.00	545.00	565.00	585.00	605.00	625.00	645.00

CHANGE TO ACHIEVE A GOAL



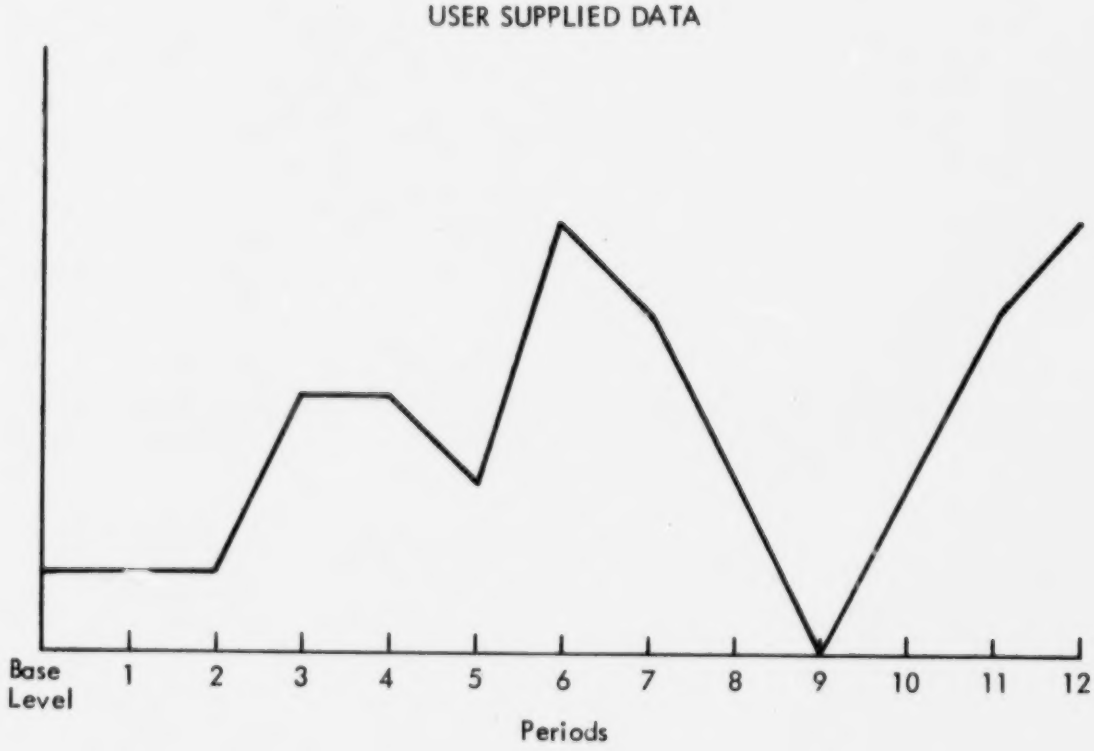
CHANGE TO ACHIEVE A GOAL

what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
40	SPONSORED RESEARCH	800900.	GOAL OF 500000 IN 3RD PERIOD

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
40	SPONSORED RESEARCH	700600.00	600300.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00	500000.00


USER SUPPLIED DATA
Base Level
1
2
3
4
5
6
7
8
9
10
11
12
Periods

USER SUPPLIED DATA

what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
3	NO BIRTHS 18 YRS AGO		DATA 92309,94600,95776,98142,98687,C
			98548,98748,98201,97575,96865,C
			94821,92474

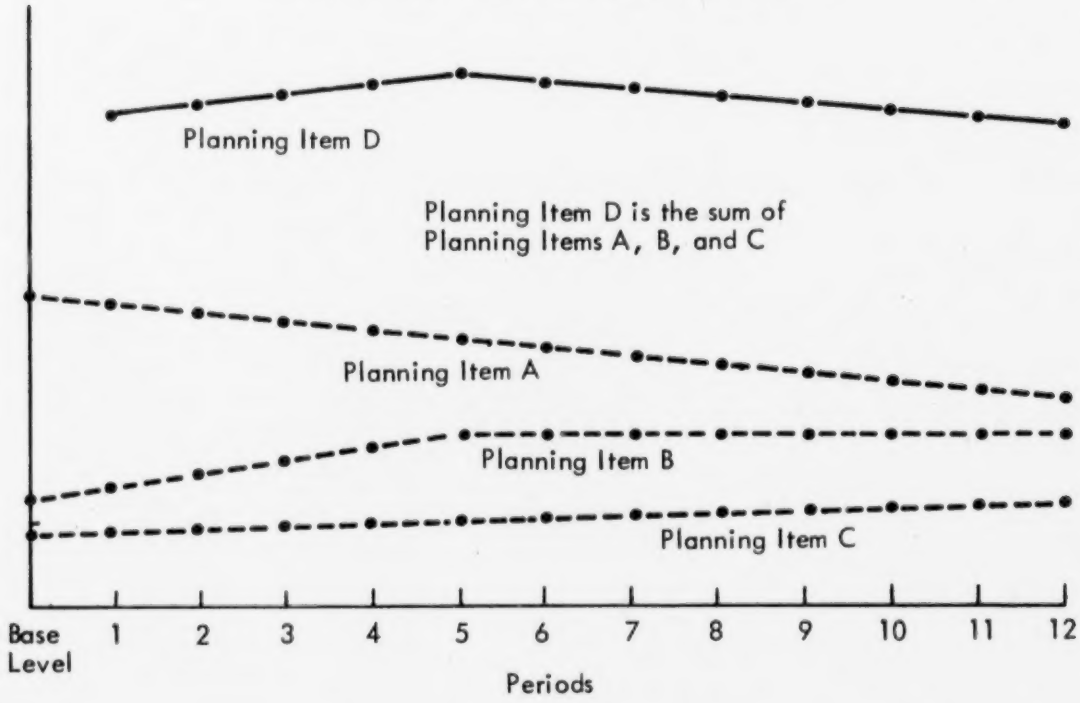
what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
3	NO BIRTHS 18 YRS AGO	92309.00	94600.00	95776.00	98142.00	98687.00	98548.00	98748.00	98201.00	97575.00	96865.00	94821.00	92474.00

DEPENDENT METHODS OF PROJECTION

Method	Keyword
Summation of Other Planning Items	SUM
Shift, or Shifted Function of Another Planning Item	SHIFT
Function of Other Planning Items	EQUATION
Maximum, or Minimum, of Other Planning Items	MAXIMUM MINIMUM
Fill Another Planning Item	FILL
Project Another Planning Item	PROJECT
Accumulative Sum of Another Planning Item	ACCUMULATIVE SUM
Accumulative Product of Another Planning Item	ACCUMULATIVE PRODUCT
Punch Cards of Other Planning Items	PUNCH
Average of Another Planning Item	AVERAGE
Printed Plot of Other Planning Items	PLOT
Return on Investment of Another Planning Item	RETURN

SUMMATION OF OTHER PLANNING ITEMS



SUMMATION OF OTHER PLANNING ITEMS

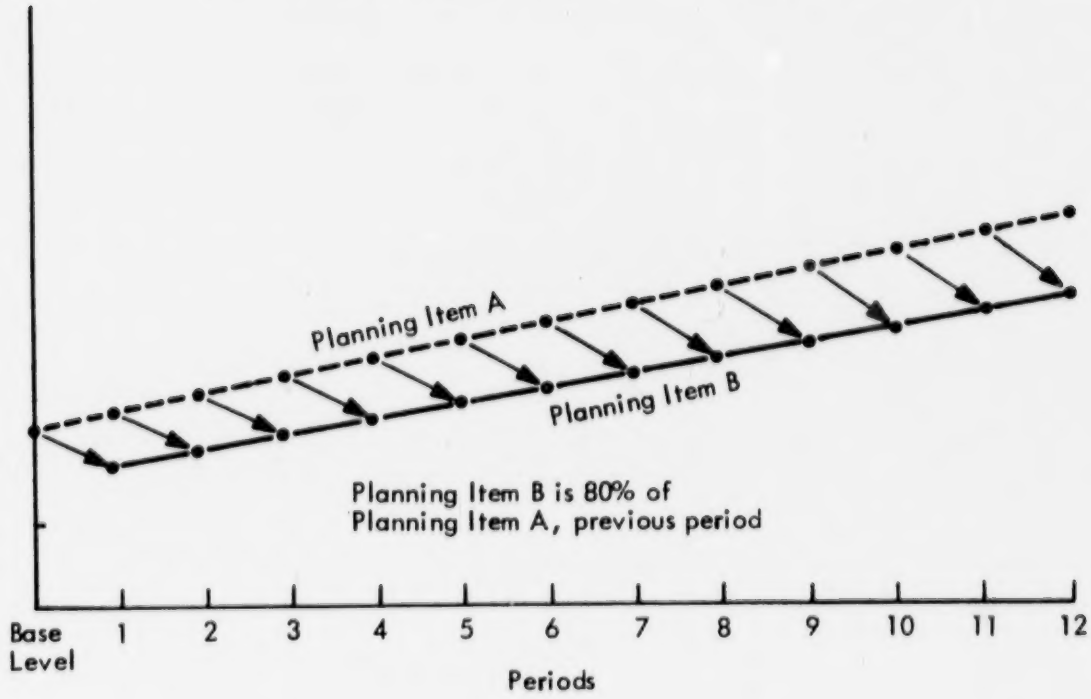
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
48	INSTRUCTION/DEPT RESEAR		SUM OF LINES 51, 52, 53

what the computer does

LINE NO. PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
48 INSTRUCTION/DEPT RESEAR	25148428	27666239	30527890	34189903	38349212	42812115	47692293	52905026	58537102	64666845	711[illegible]3567	77371363
51 FAC SALARIES TOTAL	16995136	18836953	20938676	23559027	26497406	29642963	33080375	36741404	40689411	44980890	49464960	54155536
52 SUPPORT STAFF	7253292	7929286	8689214	9676876	10840566	12097238	13475689	14959219	16571024	18332688	20204144	22195296
53 SUPPORT NON-STAFF	900000	900000	900000	954000	1011240	1071914	1136229	1204403	1276667	1353267	1434463	1520531

SHIFTED FUNCTION OF ANOTHER PLANNING ITEM



SHIFTED FUNCTION OF ANOTHER PLANNING ITEM

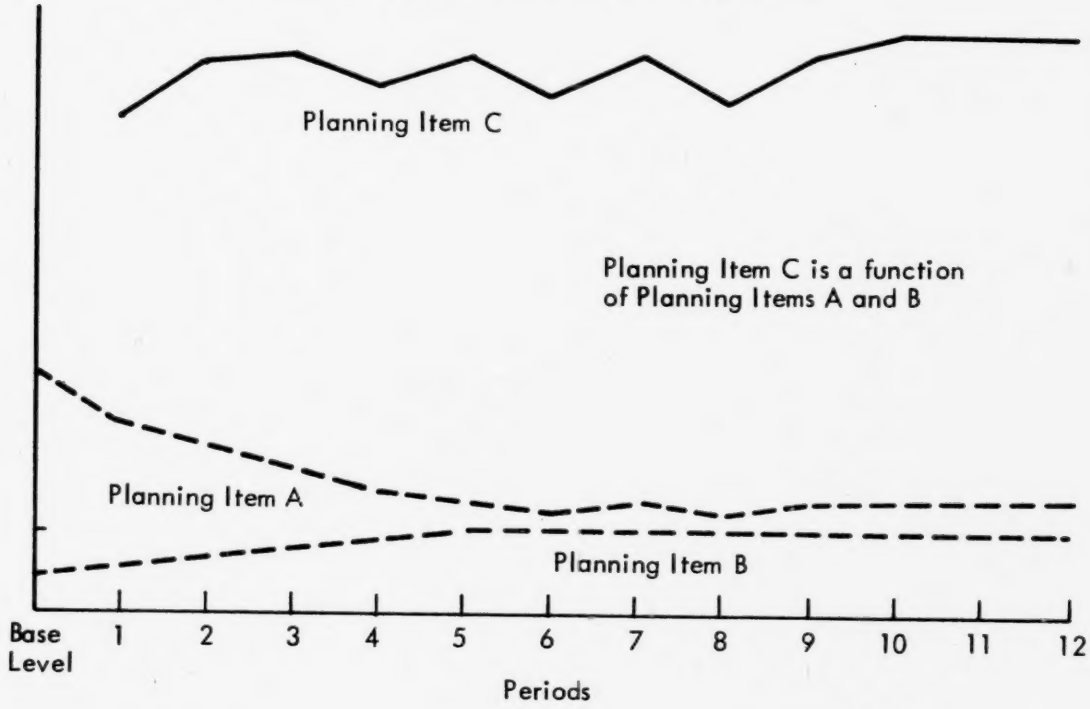
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
B	SOPHOMORES	3240	SHIFT .80 LINE 7

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
8	SOPHOMORES	3456.80	3954.51	4255.29	4557.59	4929.86	5222.51	5484.19	5769.05	6013.43	6253.77	6488.98	6630.83
7	FRESHMEN	4943.14	5319.11	5696.99	6162.33	6528.14	6855.23	7211.31	7516.79	7817.21	8111.22	8288.53	8428.07

FUNCTION OF OTHER PLANNING ITEMS



FUNCTION OF OTHER PLANNING ITEMS

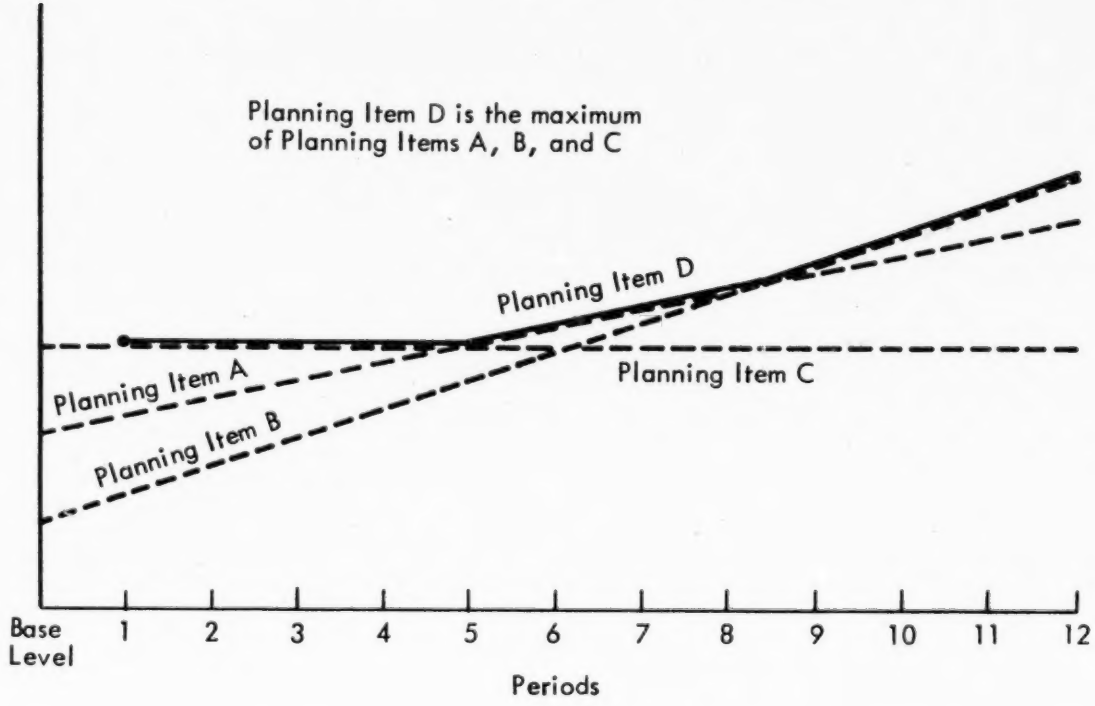
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
34	INSTATE		EQTN L 11 * L20 + L14 * L22

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
34	INSTATE	6113696	6856564	7691653	8664638	9554906	10449863	11379651	12300068	13229592	14181157	15076036	15911770
11	TOTAL INSTATE UNDER GRAD	12116.94	13097.30	14191.66	15408.53	16490.41	17496.76	18491.13	19396.50	20253.53	21088.33	21777.02	22329.32
20	FEES INSTATE UNDERGRAD	425.00	445.00	465.00	485.00	505.00	525.00	545.00	565.00	585.00	605.00	625.00	645.00
14	INSTATE GRADUATE	1928.00	1928.00	1928.00	1985.84	2045.42	2106.78	2169.98	2235.08	2302.13	2371.20	2442.33	2515.60
22	FEES INSTATE GRADUATE	500.00	533.33	566.67	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00

MAXIMUM (MINIMUM) OF OTHER PLANNING ITEMS



MAXIMUM (MINIMUM) OF OTHER PLANNING ITEMS

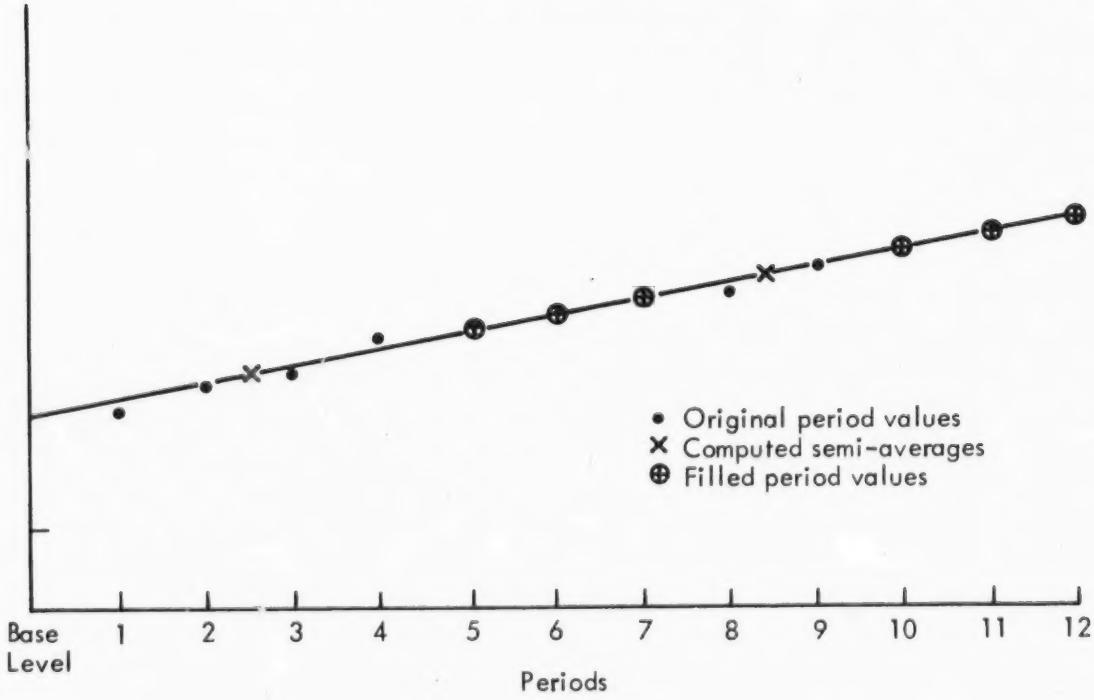
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
96	IDEAL AVE UNDERG FEE		MAXIMUM OF L94, L95

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
96	IDEAL AVE UNDERG FEE	519.44	545.65	605.84	599.58	627.36	655.72	689.31	743.57	810.27	889.34	987.14	1105.29
95	BALANCED BUDGET UNDG FEE	440.50	532.31	605.84	596.00	616.42	648.12	689.31	743.57	810.27	889.34	987.14	1105.29
94	AVE UNDERGRAD FEE	519.44	545.65	572.36	599.58	627.36	655.72	684.70	714.34	744.68	775.76	807.62	840.31

FILL ANOTHER PLANNING ITEM
(Estimated by a modified linear regression technique)



FILL ANOTHER PLANNING ITEM

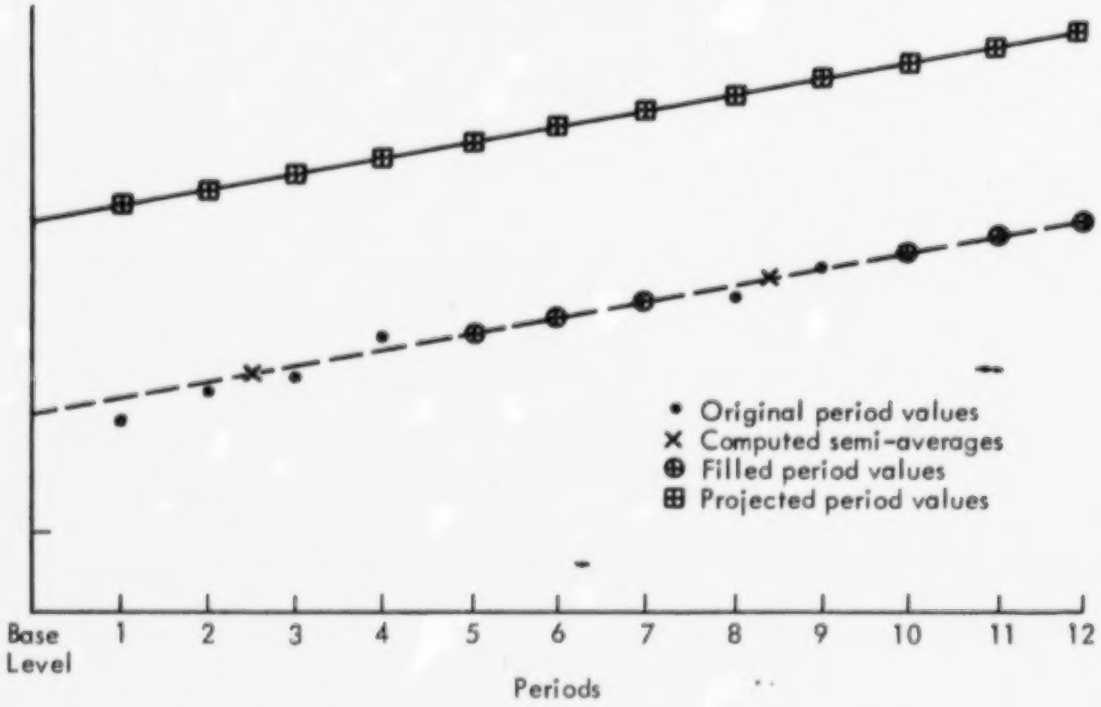
what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
92	SAMPLE'S SHARE 1960-1971		DATA 4.5, 4.5, 5.3, 0, 6.7, 6.3, 7.7, 0, 8.6, C
			9, 9.3, 9.5
6	SAMPLES SHARE 1960-1971	-	FILL LINE 92
5	SAMPLE'S SHARE		PROJECT LINE 6

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
92	SAMPLE'S SHARE 1960-1971	4.50	4.50	5.30	0.0	6.70	6.30	7.70	0.0	8.60	9.00	9.30	9.50
6	SAMPLES SHARE 1960-1971	4.50	4.50	5.30	5.77	6.70	6.30	7.70	7.87	8.60	9.00	9.30	9.50
5	SAMPLE'S SHARE	10.50	11.02	11.55	12.07	12.60	13.12	13.65	14.17	14.70	15.22	15.75	16.27

PROJECT ANOTHER PLANNING ITEM



PROJECT ANOTHER PLANNING ITEM

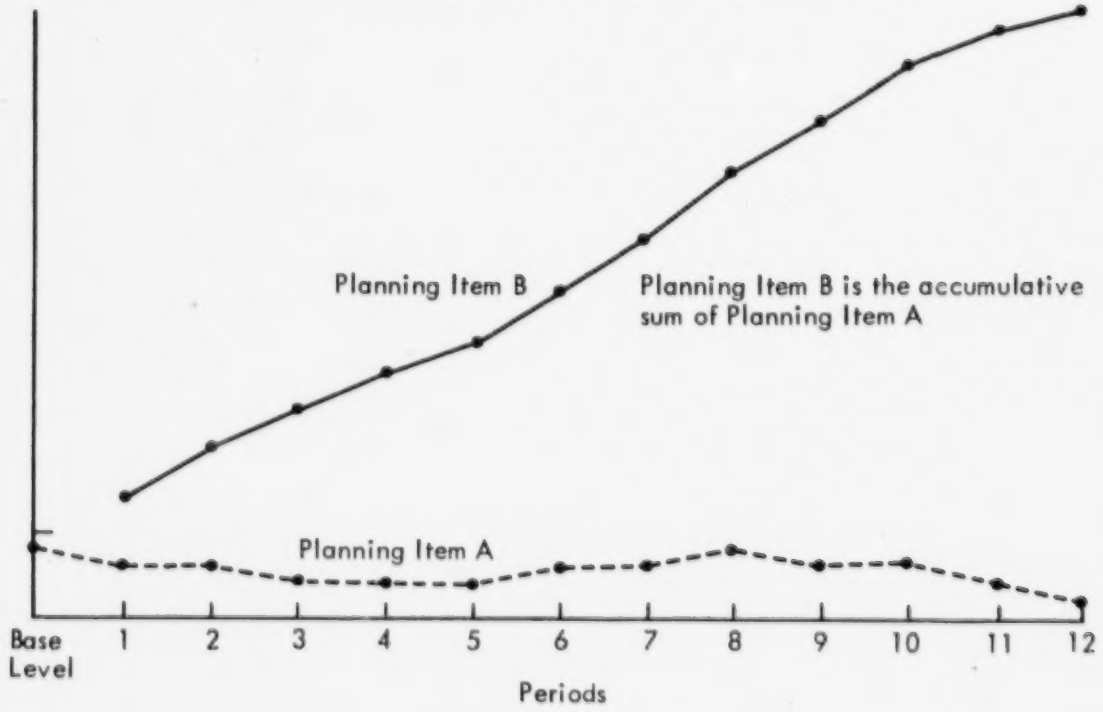
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
92	SAMPLE'S SHARE 1960-1971		DATA 4.5, 4.5, 5.3, 0, 6.7, 6.3, 7.7, 0, 8.6, C
			9, 9.3, 9.5
6	SAMPLES SHARE 1960-1971		FILL LINE 92
5	SAMPLE'S SHARE		PROJECT LINE 6

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
92	SAMPLE'S SHARE 1960-1971	4.50	4.50	5.30	0.0	6.70	6.30	7.70	0.0	8.60	9.00	9.30	9.50
6	SAMPLES SHARE 1960-1971	4.50	4.50	5.30	5.77	6.70	6.30	7.70	7.87	8.60	9.00	9.30	9.50
5	SAMPLE'S SHARE	10.50	11.02	11.55	12.07	12.60	13.12	13.65	14.17	14.70	15.22	15.75	16.27

ACCUMULATIVE SUM OF ANOTHER PLANNING ITEM



ACCUMULATIVE SUM OF ANOTHER PLANNING ITEM

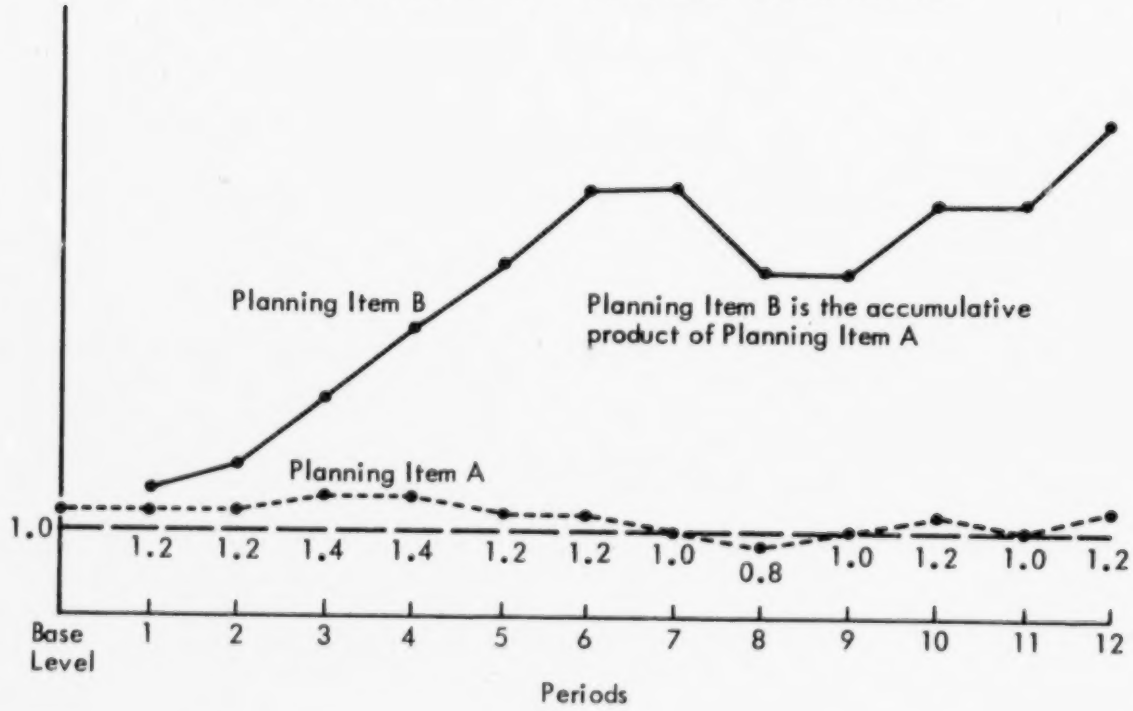
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
66	ACCUM SURPLUS/DEFICIT		ACCUMULATE THE SUM OF LINE 65

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
66	ACCUM SURPLUS/DEFICIT	1061744	1255744	728208	789488	989728	1137392	1042720	413408	-1061200	-3719968	-8059408	-14627168
65	SURPLUS/DEFICIT	1061744	194000	-527536	61280	200240	147664	-94672	-629312	-1474608	-2658768	-4339440	-6567760

ACCUMULATIVE PRODUCT OF ANOTHER PLANNING ITEM


Planning Item B
Planning Item B is the accumulative product of Planning Item A
Planning Item A
1.0
1.2 1.2 1.4 1.4 1.2 1.2 1.0 0.8 1.0 1.2 1.0 1.2
Base Level
1 2 3 4 5 6 7 8 9 10 11 12
Periods

ACCUMULATIVE PRODUCT OF ANOTHER PLANNING ITEM

what you do

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
100	COMPOUND CHANGE		ACCUMULATE THE PRODUCT OF LINE 101

what the computer does

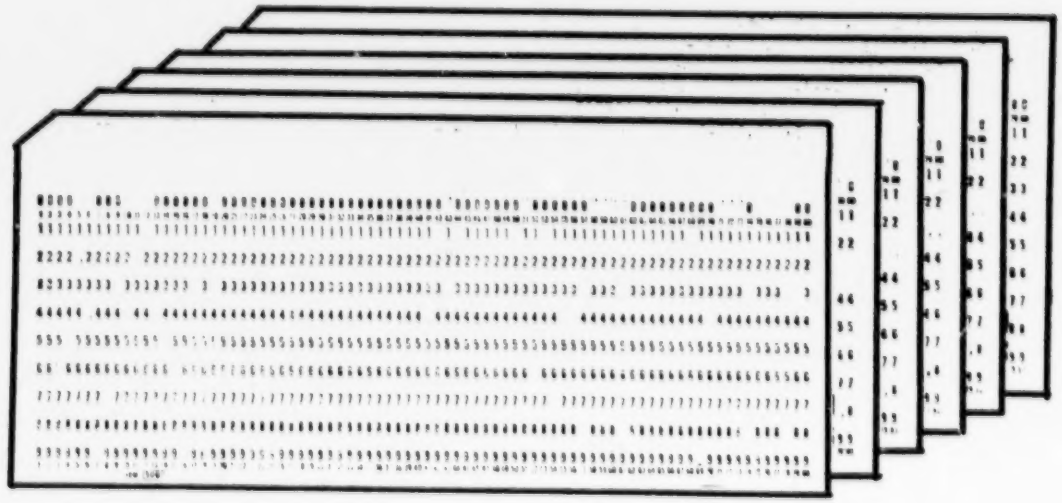
LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
100	COMPOUND CHANGE	1.04	1.10	1.14	1.17	1.25	1.28	1.31	1.37	1.38	1.49	1.66	1.67
101	WORK	1.04	1.06	1.03	1.03	1.07	1.02	1.03	1.04	1.01	1.08	1.11	1.01

PUNCH CARD OF OTHER PLANNING ITEMS

what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
97			PUNCH LINE 65

what the computer does

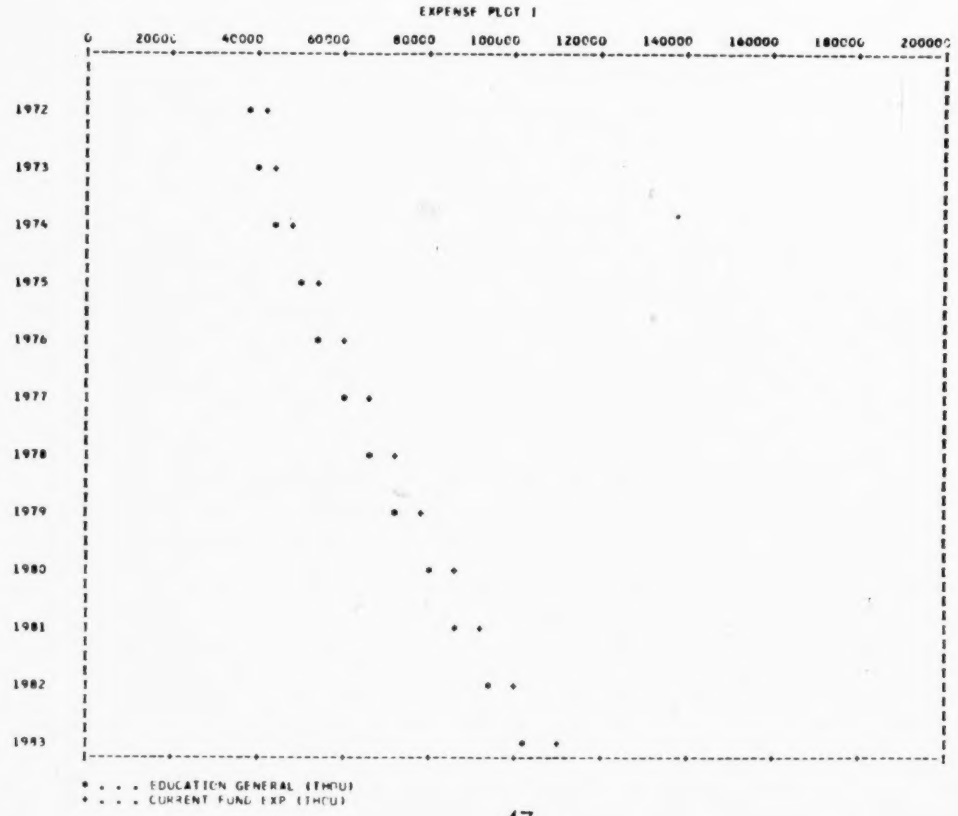


PRINTER PLOT OF OTHER PLANNING ITEMS

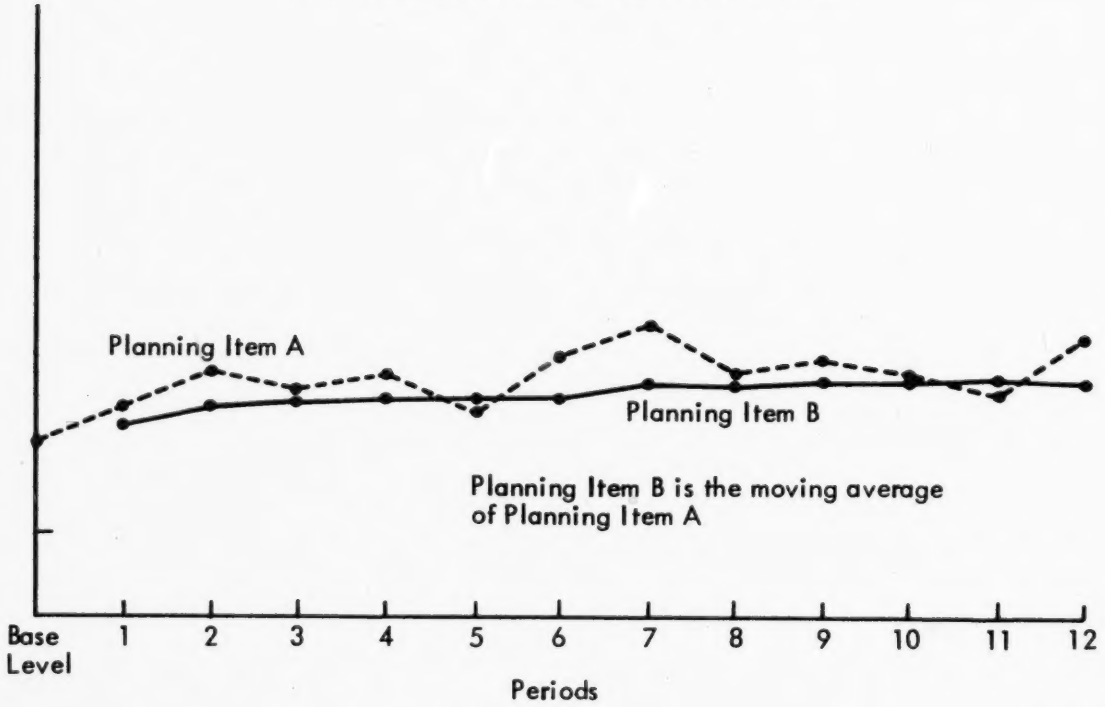
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
69	EXPENSE PLOT I		PLOT1 LINE 74, 77

what the computer does



AVERAGE OF ANOTHER PLANNING ITEM



AVERAGE OF ANOTHER PLANNING ITEM

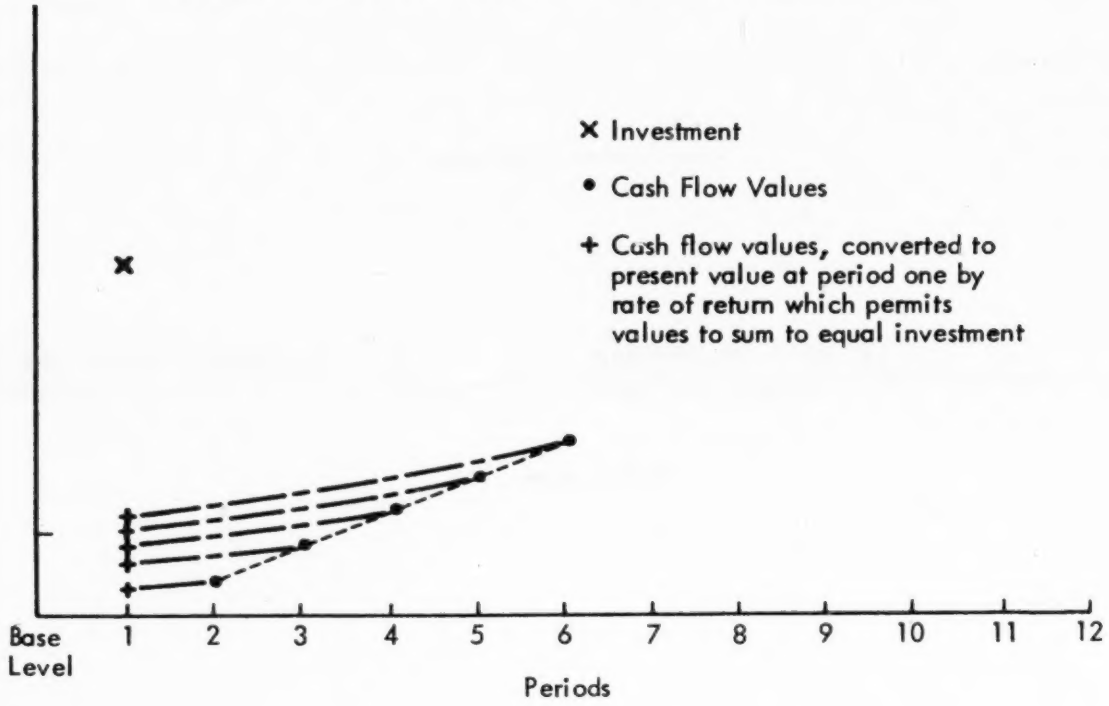
what you do

LINE NO.	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
99	AVE SURPLUS/DEFICIT		AVERAGE OF LINE 65

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
99	AVE SURPLUS/DEFICIT	1061744	627872	242736	197372	197946	189565	148960	51676	-117911	-371997	-732673	-1218930
65	SURPLUS/DEFICIT	1061744	194000	-527536	61280	200240	147664	-94672	-629312	-1474608	-2658768	-4339440	-6567768

RETURN ON INVESTMENT OF ANOTHER PLANNING ITEM



RETURN ON INVESTMENT

what you do

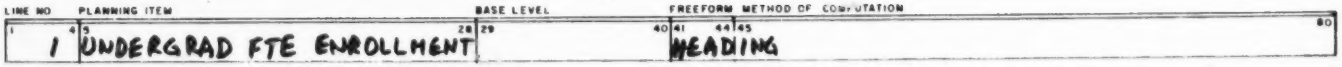
LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
181	AFTER TAX DISC YIELD		RETURN OVER 12 PERIODS L173 BEGIN 1ST

what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
181	AFTER TAX DISC YIELD	3.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
173	PROFIT	-1710004	46953	148525	188407	195649	203199	211027	219099	227377	186396	244383	253015

HEADINGS OR SECTION TITLES

what you do



what the computer does

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
1	UNDERGRAD FTE ENROLLMENT												

A planner can use section titles or headings to divide his model into logical sections.

SUMMARY REPORTS

what you do

REPORT TITLE	FREEFORM REPORT LINES
SURPLUS/DEFICIT	65, 66, 87, 88, 99

what the computer does

SURPLUS/DEFICIT

LINE NO.	PLANNING ITEM	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
65	SURPLUS/DEFICIT	1061744	194000	-527536	61280	200240	147664	-94672	-629312	-1474608	-2658768	-4339440	-6567760
66	ACCUM SURPLUS/DEFICIT	1061744	1255744	728208	789488	989728	1137392	1042720	413408	-1061200	-3719968	-8059408	-14627168
87	SUR/DEF PER UNDERGRAD	78.94	13.34	-33.49	3.58	10.94	7.60	-4.61	-29.23	-65.59	-113.58	-179.52	-264.98
88	SUR/DEF PER STUDENT	67.08	11.50	-29.26	3.16	9.70	6.76	-4.12	-26.15	-58.79	-101.95	-161.23	-237.95
99	AVE SURPLUS/DEFICIT	1061744	627872	242736	197372	197946	169565	148960	51676	-117911	-371997	-732673	-1214931

The Summary Report input format allows the user to design his own printed reports. Each report is specified by designating the title and the line numbers of the planning items to be included. The user has complete flexibility in the number of planning items and their sequence.

PLANTRAN APPLICATIONS

Enrollment projections

Unit cost analysis

Faculty analysis

Space utilization

Space needs projection

Long range budget projection

Institutional financial analysis

Departmental analysis

Resource requirement for new program/ department

Salary policy analysis

Teaching load determination

Analysis of vocational-technical programs

Tax fund analysis

Support for short-term bank loan

Support for funding requests

Impact of off-campus, independent study programs

Analytical reports for external agencies

Tuition/fee determination

Medical school planning

Student recruitment planning

Staff training

Library planning

Induced Course Load Matrix

Endowment fund analysis

Short term budgeting

Athletic program planning

Development and fund-raising forecasts

Bookstore operation

Food service cost analysis

Student financial aid planning

Maintenance and operations cost analysis

Continuing education program planning

Since PLANTRAN II is a flexible tool rather than a specific model, it has been used to address a wide variety of planning and analysis problems. Above is a list of some of the applications of PLANTRAN. These projects were undertaken without adding campus staff or using outside consultants. PLANTRAN II provided the medium for current staff to use the computer to address these concerns.

EDUCATIONAL ORGANIZATIONS

with access

to

PLANTRAN

PRIVATE COLLEGES

Avila College

Baker University

Benedictine College

Donnelly College

Graceland College

Grinnell College

Ithaca College

Kansas City Art Institute

Marycrest College

Missouri Valley College

Ottawa University

Park College

Rockhurst College

St. Mary College

Simpson College

Tarkio College

Westmar College

William Jewell College

PUBLIC UNIVERSITIES

Sixteen Senior Public Institutions in North Carolina

Iowa State University

University of Missouri-Kansas City

McMaster University (Canada)

University of Kentucky

PUBLIC COMMUNITY COLLEGES

Des Moines Area Community College

Iowa Western Community College

Johnson County Community College

Kansas City, Kansas Community College

Kirkwood Community College

Metropolitan Junior College District of Kansas City, Missouri

Prairie State College

PRIVATE UNIVERSITIES

The American University

University of Denver

Cornell University

Drake University

Duquesne University

Marquette University

Rensselaer Polytechnic Institute

St. Louis University

OTHER

Kansas City Regional Council for Higher Education

North Carolina Board of Higher Education

The following individuals have experience using PLANTRAN to address problems of educational administration.

Mr. Elmer Carriker
Special Assistant to the President
Baker University
Baldwin, Kansas
(913) 594-6447

Dr. Peter Armacost
President
Ottawa University
Ottawa, Kansas
(913) 242-5200

Dr. Paul Givens
Director of Institutional Research
Ithaca College
Ithaca, New York
(607) 274-3113

Dr. E. C. Higbee
Director
Office of Institutional Research
McMaster University
Hamilton, Ontario, CANADA
(416) 522-4971

Dr. William Adrian
Special Assistant to the Chancellor
for Long Range Planning
University of Denver
Denver, Colorado
(303) 753-1964

Rev. Fred Clark
Director of Institutional Research
Duquesne University
Pittsburgh, Pennsylvania
(412) 434-6063

Dr. Oliver C. Houston
Assistant to the President
Graceland College
Lamoni, Iowa 50140
(515) 784-3311

Dr. Rogers P. Finch
Vice President for Planning
Rensselaer Polytechnic Institute
Troy, New York
(518) 270-6246

Mr. Arthur Ashton
Coordinator for Planning and
Management Systems
American University
Washington, D. C.
(202) 686-2706

Dr. Harold Finch
Dean of the Institute for
Community College Development
Johnson County Community College
57th and Merriam Drive
Shawnee Mission, Kansas 66203
(913) 236-4500

Dr. Gerald Baltz
Coordinator of Academic Research
St. Louis University
221 North Grand Boulevard
St. Louis, Missouri 63103
(314) 535-3300

Dr. Joseph Matar
Associate Provost
Marquette University
615 North Eleventh Street
Milwaukee, Wisconsin 53233
(414) 224-7040

Dr. Robert Reiman
Director of Institutional Research
Appalachian State University
Boone, North Carolina 28608
(704) 264-8871

Mr. Doug Little
Director of Data Processing
Drake University
Des Moines, Iowa 50311
(515) 271-3184

Mr. Lowell Sisson
Assistant to the Superintendent
Kirkwood Community College
6301 Kirkwood Boulevard, S.W.
Box 2068
Cedar Rapids, Iowa 52406
(319) 398-5486

Mr. John Esbin
Associate Director of the
Computer Center
University of Iowa
Iowa City, Iowa 52240
(319) 353-3366

Mr. Jack Asby
Assistant Superintendent for
Administrative Services
Des Moines Area Community College
2006 Ankeny Boulevard
Ankeny, Iowa 50021
(515) 964-0651

Dr. Rhae Swisher
Vice President for Finance
Simpson College
Indianola, Iowa 50125
(515) 961-6251

Mr. Stanley Love
Director of Administrative
Services
Kansas City Regional Council
for Higher Education
4901 Main Street, Suite 320
Kansas City, Missouri 64112
(816) 561-6693

Mr. Norman Kladstrup
Executive Director
Higher Education Facilities
Commission of the State of Iowa
201 Jewell Building
914 Grand Avenue
Des Moines, Iowa 50309
(515) 281-3501

Dr. William Sutterfield
Vice President for
Administration
Huron College
Huron, South Dakota
(605) 352-8721

*** Installation of the PLANTRAN II Software Package. This will either be on the university's own computer or a machine to which the institution has access. Source programs are provided.

*** An Intensive 3-Day, On-campus Training Session. This covers instruction in the PLANTRAN II language as well as actual work on real institutional planning problems.

*** Planning Workshop Series. The university may send staff members to this series held regularly in Kansas City. The workshops focus on specific techniques of institutional research and planning implemented in the PLANTRAN II System.

*** PLANTRAN II User Group. There is an increasing amount of information and model exchange among the users of the system. Periodic user conferences are held in conjunction with major professional and association meetings.

*** PLANTRAN II Techniques Manual. MRI publishes documentation of useful PLANTRAN II models as developed by users. This publication is a cumulative library of useful routines.

*** Follow-up,On-Campus Visit. This visit is scheduled at the convenience of the university planners for implementing new software, providing special training, or giving advice on modeling techniques.

*** Continuing Consultation. MRI provides general support to the university planners.

Midwest Research Institute had developed a planning service program organized around PLANTRAN II. Over 50 U.S. and Canadian colleges and universities are participating in the program. While the exact cost depends upon the type and extent of project activity, the services described above are available to individual institutions for a $9,500 one-time fee.

Groups of institutions have acquired access to the planning system for substantially less than the individual institution fee. The exact cost for a multi-institution arrangement depends upon the number and type of machine installations, the amount of on-site training, and any additional activity requiring MRI staff involvement.

An exact cost estimate and description of specific services and activities will be described in a proposal issued by Midwest Research Institute at the request of an institution, group of institutions, or other appropriate entity.

PLANTRAN II

Technical Specifications

Computer Requirements:	IBM 360/30 or equivalent computer. 46K bytes core memory, direct access device. Version of PLANTRAN II has been developed for the CDC 6400, RCA Spectra 70/35, Burroughs 5500, and Honeywell 1200. Installation on machines other than these generally requires additional MRI staff effort and may affect the cost.
Source Language:	DOS COBOL D, FORTRAN IV OS COBOL G, FORTRAN F Compatible with ANSI
Maximum Model Size:	Approximately 4,000 planning items, i.e., a 4,000 x 12 matrix.

The following pages contain a brief example of a PLANTRAN II application. Since PLANTRAN II is not a specific model but rather a system for building models, this example is not the PLANTRAN II model, but rather just one of an unlimited number of models which can be constructed.

This example is a model of an instructional department. Its objective is to calculate the financial and personnel resources required by the projected student load. These requirements will be generated for the next 6 years.

Since this is meant to be an example of PLANTRAN II rather than of educational planning, straightforward techniques of projection and interrelation are used. The capacity (12 x 4000 matrix) and flexibility (18 methods of projection) make PLANTRAN II applicable to more complex analysis in both large and small institutional settings.

NAME _____

PLANTRAN II DATA SHEET
IDENTIFICATION

PAGE 1 OF 2 MRI

ORGANIZATION	MODEL DESCRIPTION	DATE	BASE PERIOD T	H	R	RUN NO
ANY UNIVERSITY	DEPARTMENTAL	CURRENT DATE	1972 T			

T - TIME PERIOD
H - HEADING
R - REPLACEMENT

COLUMNAR HEADINGS - OPTIONAL

PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8	PERIOD 9	PERIOD 10	PERIOD 11	PERIOD 12

MODEL SPECIFICATION

LINE NO	PLANNING ITEM	BASE LEVEL	FREEFORM METHOD OF COMPUTATION
1	WEEKLY STUDENT CONT HRS	7250	DATA 7270, 7280, 7295, 7300, 7290, 7275
2	AVERAGE SECTION SIZE	35	INCREASE 1 BEGINNING IN 3RD YEAR
3	AVE FACULTY TCH LD (WSCH)	9.2	PERCENT DECREASE OF .5 BEGIN IN 5th YEAR
4	FTE FACULTY REQUIRED	22.5	EQUATION: L1/(L2*L3)
5	PCT RANKED FACULTY	70	INCREASE .5 PER YEAR
6	PCT TEACHING ASSISTANTS	30	EQUATION: 100-L5
7	FTE RANKED FACULTY	15.75	EQUATION: L4*.0115
8	TEACHING ASSISTANTS	10	EQUATION: L4*.0116/.67
9	AVERAGE FACULTY SALARY	15650	PERCENT INCREASE OF 2.5 PER YEAR
10	AVERAGE TCH ASSIST SAL	4800	INCREASE 200 PER YEAR
11	FACULTY SALARIES	246488	EQUATION: L7*L9
12	TCH ASSISTANT SALARIES	48000	EQUATION: L8*L10
13	SUPPORT STAFF	7.2	EQUATION: 2+.33L7
14	AVE SUPPORT STAFF SALARY	5000	PERCENT INCREASE 2.5 PER YEAR
15	SUPPORT STAFF SALARIES	36000	EQUATION: L13*L14
16	TOTAL SALARIES	330487	SUM OF LINES 11, 12, 15
17	SUPPORT BUDGET PER FAC	520	INCREASE 50 BEGINNING IN 5th PERIOD
18	SUPPORT BUDGET	8190	EQUATION: L7*L17

SUMMARY REPORTS

REPORT TITLE	FREEFORM REPORT LINES

NAME _____

PLANTRAN II DATA SHEET
IDENTIFICATION

MRI

ORGANIZATION (1–24)	MODEL DESCRIPTION (25–40)	DATE (41–56)	BASE PERIOD T (57–60)	H (61)	R (63)	(65)	T - TIME PERIOD H - HEADING R - REPLACEMENT	RUN NO. (78–80)

COLUMNAR HEADINGS - OPTIONAL

PERIOD 1 (1–6)	PERIOD 2 (7–12)	PERIOD 3 (13–18)	PERIOD 4 (19–24)	PERIOD 5 (25–30)	PERIOD 6 (31–36)	PERIOD 7 (37–42)	PERIOD 8 (43–48)	PERIOD 9 (49–54)	PERIOD 10 (55–60)	PERIOD 11 (61–66)	PERIOD 12 (67–72)	

MODEL SPECIFICATION

LINE NO. (1–4)	PLANNING ITEM (5–28)	BASE LEVEL (29–40)	FREEFORM METHOD OF COMPUTATION (41–80)
19	DIRECT EXPENSE	338677	EQUATION: L16 + L18
20	INDIRECT COSTS	161641	EQUATION: .4891 L16
21	TOTAL DEPT EXPENSE	500318	SUM OF LINES 19, 20
22	TOTAL EXPENSE PER WSCH	34.50	EQUATION: L21 / Z41
23	WORK		SHIFT LINE 22
24	PCT CHG IN EXP/WSCH		EQUATION: (L22 - L23) / L23 * 100
25	AVE PCT CHG IN EXP/WSCH		AVERAGE OF LINE 24
26	DEPARTMENTAL PLOT I		PLOT 11, 12, 15, 18
27	DEPARTMENTAL PLOT II		PLOT 22, 7, 8
28			

SUMMARY REPORTS

REPORT TITLE (1–24)	FREEFORM REPORT LINES (25–80)
STAFF REQUIREMENTS	4, 7, 8, 13
BUDGET REQUIREMENTS	11, 12, 15, 16, 28, 18, 28, 19, 28, 20, 28, 21
ANALYSIS	2, 3, 9, 5, 6, 17, 22, 24, 25

ANY UNIVERSITY
DEPARTMENTAL
RUN

ANALYSIS OF MATRIX
FOR A
6 PERIOD FORECAST

CURRENT DATE

BASE YR. 1972

LINE	DESCRIPTION	BASE	METHOD OF COMPUTATION
1	WEEKLY STUDENT CONT HRS	7250	DATA7270,7280,7295,7300,7290,7275
2	AVERAGE SECTION SIZE	35	INCREASE 1 BEGINNING IN 3RD YEAR
3	AVE FACULTY TCH LD(WSCH)	9.2	PERCENT DECREASE OF .5 BEGIN IN 5TH YEAR
4	FTE FACULTY REQUIRED	22.5	EQUATION: L1 / (L2 * L3)
9	AVERAGE FACULTY SALARY	15650	PERCENT INCREASE OF 2.5 PER YEAR
5	PCT RANKED FACULTY	70	INCREASE .5 PER YEAR
6	PCT TEACHING ASSISTANTS	30	EQUATION: 100-L5
7	FTE RANKED FACULTY	15.75	EQUATION: L4*.01L5
8	TEACHING ASSISTANTS	10	EQUATION: L4* .01 L6 / .67
10	AVERAGE TCH ASSIST SAL	4800	INCREASE 200 PER YEAR
11	FACULTY SALARIES	246488	EQUATION: L7 * L9
12	TCH ASSISTANT SALARIES	48000	EQUATION: L8 * L10
13	SUPPORT STAFF	7.2	EQUATION: 2 * .33 L7
14	AVE SUPPORT STAFF SALARY	5000	PERCENT INCREASE 2.5 PER YEAR
15	SUPPORT STAFF SALARIES	36000	EQUATION: L13 * L14
16	TOTAL SALARIES	330487	SUM OF LINES 11,12,15
17	SUPPORT BUDGET PER FAC	520	INCREASE 50 BEGINNING IN 5TH PERIOD
18	SUPPORT BUDGET	8190	EQUATION: L7 * L17
19	DIRECT EXPENSE	338677	EQUATION: L16 + L18

ANY UNIVERSITY
DEPARTMENTAL
RUN

ANALYSIS OF MATRIX
FOR A
6 PERIOD FORECAST

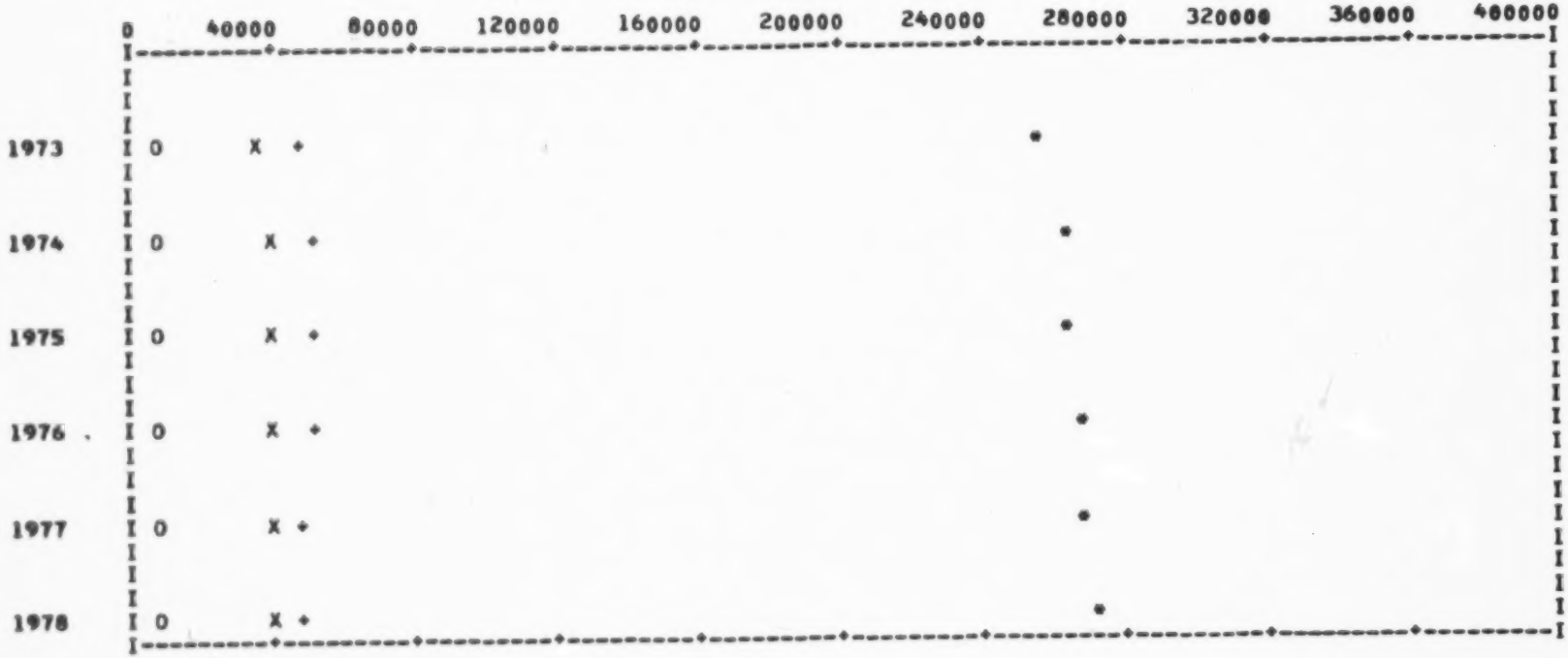
CURRENT DATE

BASE YR. 1972

LINE	DESCRIPTION	BASE	METHOD OF COMPUTATION
20	INDIRECT COSTS	161641	EQUATION: .4891 L16
21	TOTAL DEPT EXPENSE	500318	SUM OF LINES 19,20
22	TOTAL EXPENSE PER WSCH	34.50	EQUATION: L21 / 2L1
23	WORK		SHIFT LINE 22
24	PCT CHG IN EXP/WSCH		EQUATION:(L22-L23)/L23 * 100
25	AVE PCT CHG IN EXP/WSCH		AVERAGE OF LINE 24
26	DEPARTMENTAL PLOT I		PLOT 11,12,15,18
27	DEPARTMENTAL PLOT II		PLOT 22,7,8
28			

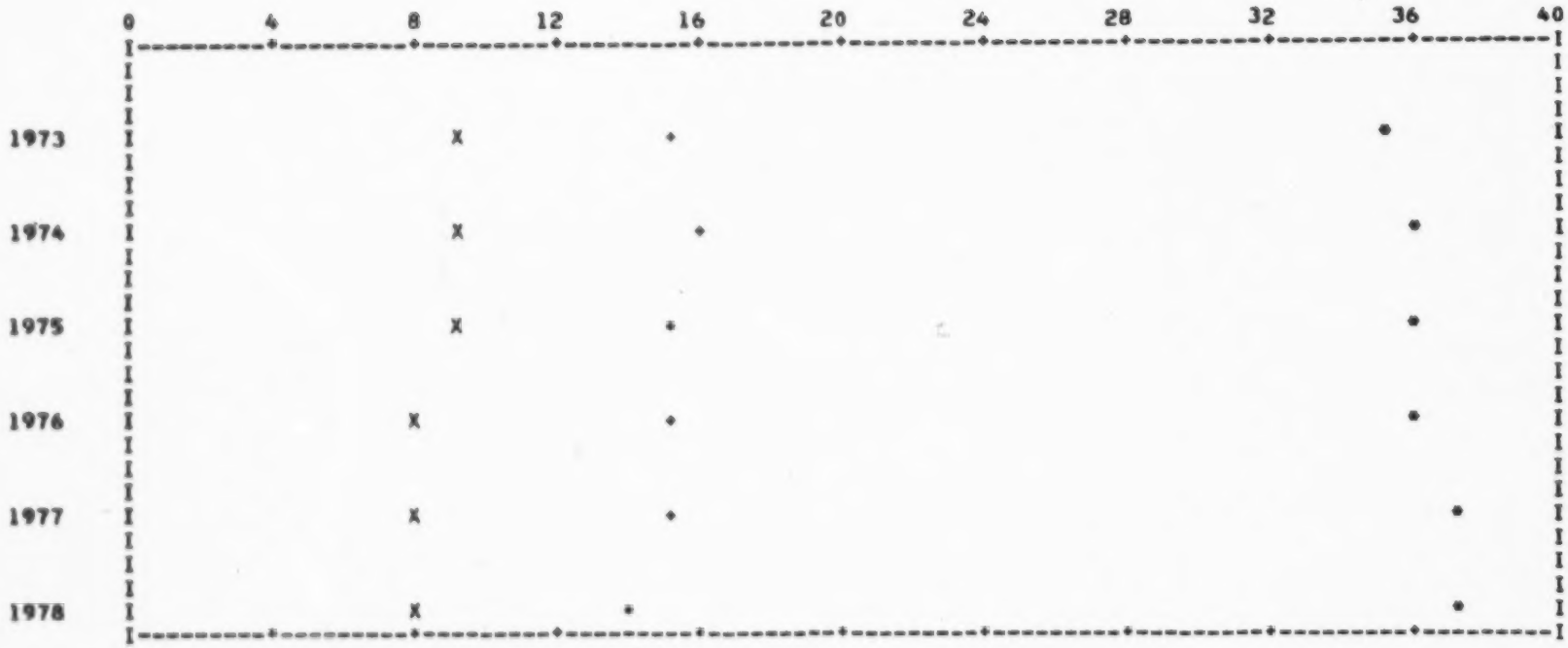
```
THE FOLLOWING REPORTS ARE REQUESTED
STAFF REQUIREMENTS              4,7,8,13
BUDGET REQUIREMENTS             11,12,15,16,28,18,28,19,28,20,28,21
ANALYSIS                        2,3,9,5,6,17,22,24,25
```

DEPARTMENTAL PLOT I



* . . . FACULTY SALARIES
\+ . . . TCH ASSISTANT SALARIES
X . . . SUPPORT STAFF SALARIES
0 . . . SUPPORT BUDGET

DEPARTMENTAL PLOT II



* . . . TOTAL EXPENSE PER WSCH
\+ . . . FTE RANKED FACULTY
X . . . TEACHING ASSISTANTS

ANY UNIVERSITY
DEPARTMENTAL

STAFF REQUIREMENTS

CURRENT DATE
RUN

LINE NO.	PLANNING ITEM	1973	1974	1975	1976	1977	1978
4	FTE FACULTY REQUIRED	22.58	22.61	22.03	21.45	20.96	20.48
7	FTE RANKED FACULTY	15.92	16.05	15.75	15.44	15.19	14.95
8	TEACHING ASSISTANTS	9.94	9.79	9.37	8.96	8.60	8.25
13	SUPPORT STAFF	7.25	7.30	7.20	7.10	7.01	6.93

ANY UNIVERSITY
DEPARTMENTAL

BUDGET REQUIREMENTS

CURRENT DATE
RUN

LINE NO.	PLANNING ITEM	1973	1974	1975	1976	1977	1978
11	FACULTY SALARIES	255332.31	263934.19	265415.63	266732.13	269032.44	271340.44
12	TCH ASSISTANT SALARIES	49704.51	50886.44	50593.93	50188.52	49890.63	49519.29
15	SUPPORT STAFF SALARIES	37170.00	38333.16	38752.00	39160.04	39678.51	40204.70
16	TOTAL SALARIES	342206.82	353153.78	354761.55	356080.68	358601.57	361064.43
18	SUPPORT BUDGET	8276.96	8347.13	8189.25	8029.14	8660.56	9269.34
19	DIRECT EXPENSE	350483.75	361500.88	362950.69	364109.75	367262.06	370333.69
20	INDIRECT COSTS	167373.31	172727.50	173513.81	174159.00	175392.00	176596.56
21	TOTAL DEPT EXPENSE	517857.06	534228.38	536464.50	538268.75	542654.06	546930.25